with some of the many nebulous fragments which continued to be drawn towards it from unfathomed depths of space. Most of these became incorporated with the sun, but a certain proportion must have been intercepted by the planets, which, in their forming state, as possessing less mass and velocity, were more sensitive to such shocks than when fully formed. Thus, the plane of the ecliptic might have been altered, we are told, 1° by the impact upon the inchoate earth of a body possessing 1/1000 its present mass. Facilities even greater were offered for changing the elements of rotation; that of the earth, when of seventy times its actual radius, might even have been stopped altogether, by collision, under specially favourable circumstances, with a mass only 1/10600 the terrestrial.

But this method of explanation is radically unsatisfactory. It suggests the *Deus ex machinâ* of an unskilled dramatist, and cannot be admitted without protest into scientific speculation. We have learned to regard cometary impacts as the last resource of the distressed cosmogonist. Such events are not impossible, but to resort to them in difficulties is to throw up the game of ordered inference. The conviction remains unalterable that the results visible to us were brought about by means less apparently fortuitous. Dr. Braun, for example, is obliged to suppose not only that, before the separation of the moon, the axis of the lunar-terrestrial nebula was deviated, by extraneous agencies of the kind indicated, to the extent of 5° from its original position of perpendicularity to the plane of the ecliptic; but that, subsequently to the separation, further shocks continued the process upon the earth alone until the inclination attained its present value of 23½°. Still less admissibly, the solar axis is assumed, after the formation of Venus, to have been tilted 5° by a number of successive impacts. A transcendent degree of improbability seems to be reached by this conjecture.

In the order of planetary production, Dr. Braun follows Laplace. Neptune is his oldest planet. And the fact that it revolves very nearly in the "invariable plane" of the solar system is confirmatory of the view that it really was the first body (instead of being the last, as M. Faye supposes) to become severed from the primitive nebula, the rotation of which is likely to have been conducted in that plane (Wolf, *Bull. Astronomique*, t. ii. p. 228). Neptune alone, owing to the distinction of his retrograde rotation, is allowed by our author to have been formed by the detachment and eventual condensation of a nebulous ring. But Prof. Kirkwood has raised an objection to this orthodox mode of genesis which applies with especial force to the remotest planet. The coalescence into a single globe of the fragments of a broken-up ring, if it happened at all (which is uncertain) would, it appears, have been an unconscionably slow process. Thus, two opposite portions of a ring of the dimensions of Neptune's orbit, could scarcely have come together in less than 150,000,000 years. It must be admitted that this is a startling demand on the time-exchequer even of the cosmos.

Uranus is regarded by Dr. Braun as what Bacon called a "limiting instance" between the annular and the nuclear methods of generation. An abortive ring gave place to a centre of condensation, the result (helped, perhaps, by some well-aimed cometary shoves) being the indecisive character of the Uranian rotation on an axis lying prone in the plane of revolution.

These, then, are the main outlines of the last and newest cosmogony. While dissenting from some of its conclusions, we readily admit that it is, in several ways, a noteworthy effort. Its appearance may be said to mark the definitive abandonment, by sound thinkers, of the annular method of planet and satellite formation. The preciseness of the conditions of that celebrated hypothesis lent it its charm, but has proved its ruin. Had they been less definite, it might have lived longer. But it gave, as it were, hostages to the future which it has not been able to redeem.

It is gradually becoming clear that, while the various members of the solar family owned unquestionably a common origin, they can scarcely be said to have had a common history. Each ran through a cycle of development particular to itself, and appointed, without doubt, to adapt it to a special purpose. The biography of the earth and moon, as narrated by Prof. Darwin, is an example. Here influences predominated which, in every other secondary system, were comparatively unfelt.

This growing persuasion of what we may call planetary individuality is reflected in Dr. Braun's vigorous and original chapters. He has honestly, and with no small ability, worked out *ab initio* the problems that they deal with, and he finds them insoluble by the uniformitarian method of treatment. The expedients by which he seeks to obtain a diversity of results by introducing a diversity of vicissitudes, strike us perhaps as arbitrary and awkward; but the admission of their necessity by an inquirer of such acuteness, and so well abreast of contemporary scientific thought, is highly instructive. We shall return later to the part of his interesting work devoted to solar theory.

A. M. CLERKE.

NOTES.

ON Tuesday Lord Hartington introduced to Sir W. Hart Dyke a deputation consisting of Sir Henry Roscoe, Sir Lyon Playfair, Mr. Rathbone, Mr. G. Howell, Mr. Cyril Flower, Sir B. Samuelson, and other gentlemen interested in education. They urged the desirability of the Technical Education Bill being passed, and of certain changes being made in the measure. Sir W. Hart Dyke replied favourably on both points. He was of opinion that the prospects of the Bill were good, both in the House of Commons and in the House of Lords.

THE list of foreign men of science who have accepted the invitation of the Local Committee to attend the Manchester meeting of the British Association is steadily increasing, and now numbers considerably over a hundred. Amongst those whose names have been received since the list we published on July 7, we note Prof. Cremona, of Rome; Dr. Neumayer, Director of the Hamburg Marine Observatory; H. A. Rowland, Baltimore; Dr. Werner Siemens, of Berlin; Prof. Horstman, Heidelberg; Prof. L. Weber, Breslau; Prof. Capellini, Bologna; Prof. Carvill Lewis, Philadelphia; Prof. O. Bütschli, Heidelberg; Prof. Carnoy, Louvain; Prof. Erb, Heidelberg; Dr. Treub, Director of the Botanic Gardens, Java; Capt. Coquilhat, Brussels; Dr. Godefroi, 's Hertogenbosch; Dr. Ludwig Wolf, Leipzig; Signor Bonghi, the late Italian Minister of Education; Signor Luzzati, Rome; Dr. E. Atkinson, Director of the Massachusetts Bureau of Statistics; and Dr. G. Boissevain, Amsterdam. The King of the Belgians has intimated his intention of nominating two representatives of the Congo Free State to attend the meeting, and of these General Strauch, Administrator-General of the Congo Free State, is expected to be one. A correspondent in Paris writes to us that the Emperor of Brazil, who has lately spent some time in the French capital, will probably attend the meeting of the Association.

MR. A. T. ATCHISON, Secretary of the British Association, is authorized to state that at the Manchester meeting space will be provided in the galleries of the Reception Room for the exhibition of specimens and instruments shown in connexion with and in illustration of papers read in the Sections. To secure admission a brief description of the specimens or instruments must be submitted to the Local Secretaries not later than August 10, together with a statement of the dimensions of the table or other fixture required. No motor power will be available. The objects must be exhibited at the risk of the owners;

and the Local Committee, while it will endeavour to meet all reasonable wishes, reserves to itself the right to exclude all exhibits that may appear to it to be for any reason unsuitable. No objects shown for advertising purposes will be admissible.

THE summer meetings of the Institution of Mechanical Engineers were held this week on Tuesday and Wednesday in the University of Edinburgh, under the presidency of Mr. E. H. Carbutt. After the meeting on Tuesday, the members inspected the Forth Bridge and Works.

ON Saturday, July 30, the statue of Paul Broca, close to the Medical School, Paris, was unveiled. Addresses were delivered by different persons connected with the Anthropological School.

A CHAIR of Sanitary Engineering has been established in the Imperial University of Japan. It is believed to be the only Chair of the kind at present in existence. The Professor appointed to fill it is Mr. W. K. Burton, lately senior Sanitary Engineer to the London Sanitary Protection Association.

THE geographical habitat of *Peripatus leuckarti*, Sänger, is said (*Archiv für Naturg.* 1871, p. 407) by Prof. Leuckart to be "New Holland." Owing to the vagueness of our knowledge of the subject, it may be of interest to state that two specimens of what appears to be this species have been found in the Queensland scrubs, near Wide Bay. These specimens have been presented to the British Museum by Mr. E. P. Ramsay, of the Australian Museum, Sydney.

THE announcement of the discovery of more than a dozen new elements appears at first sight rather sensational, and were it not that the names of Krüss and Nilson are sufficient guarantees of its authenticity the intimation would probably be received with more than a little caution. Such, however, is the startling result of the long, laborious, and exceptionally difficult researches of the Swedish chemists upon the nature of the rare earths contained in several sparsely-distributed minerals, and a detailed account of their labours will be found in the number of the *Berichte* just issued. A precise measurement of the wavelengths of the lines and bands in the absorption-spectra of the nitrates of the rare earths contained in thorite of Brevig and Arendal, wöhlerite of Brevig, cerite of Bastnäs, fergusonite of Arendal and Ytterby, and in euxenite of Arendal and Hitterö, has resulted in the surprising observation that only a particular few of the lines supposed by former observers to belong to the nitrate of any one metal are present in the absorption-spectra of the nitrates derived from certain minerals, the other lines being absent in these, but present in the nitrate spectra of other minerals, while some that are present in the former are absent or very faint in the latter. For example, only one of the lines supposed to belong to the nitrate of holmium is present in any intensity in the spectrum of the nitrates from thorite of Brevig, while in the spectrum of nitrates derived from other minerals it is but an insignificant line among several holmium lines much more intense. The conclusion from most exhaustive spectral measurements is inevitable, that most of the so-called elements in these minerals are compound substances, the various ingredients of which are present in certain minerals and absent in others; further, the fractionation of the nitrates has led to the partial separation of a large number of the components themselves. Holmium, the metal which Soret called X, and which Lecoq de Boisbaudran separated into two components, is now shown to consist of seven distinct elements—Xα, Xβ, Xγ, Xδ, Xε, Xζ, and Xη; erbium of two—Erα and Erβ, which it is possible to separate by fractionation; thulium, named by Cleve in 1879, also of two—Tmα and Tmβ; didymium which was shown by von Welsbach to consist of two components, praseodym and neodym, must, in the light of these spectral differences, consist of not less than nine distinct elements, while samarium, the name given by Lecoq de Boisbaudran to Marignac's Yβ, is composed of at least two components—Smα and Smβ. Hence, in place of holmium, erbium, thulium, didymium, and samarium, we are constrained to accept the existence of more than twenty elements, in the work of completing the isolation of which Drs. Krüss and Nilson urgently invite assistance.

THE United States *Monthly Weather Review* for March and April contains interesting notes, *e.g.* (1) Average storm-tracks over the United States during March, compiled from observations for the years 1873–85. The paths pursued by these storm-centres are divided into four distinct classes, and are traced until the disappearance of the storms at various points on the Atlantic coast. (2) Rain frequency and wind rose for April, with charts constructed from all observations available from the commencement of the records until the end of 1886. The charts have been prepared for use in the current weather predictions of the service. The Reviews also contain descriptions of the storms which occurred over the North Atlantic during each month, and their approximate paths are shown on charts, together with the distribution of icebergs reported.

THE *Jahres-Bericht* of the Central Meteorological Office of the Grand Duchy of Baden, for 1886, contains the results of meteorological observations at sixteen stations of the second and third orders, and twenty-nine rain stations, of which the positions and heights above sea are given. The Central Office has taken part in two Conferences during the year—one at Munich, relative to the investigation of the frequency, direction of propagation, and intensity of hailstorms; and the other at Friedrichshafen, with respect to a physical survey of the Lake of Constance. The proposals made at both Conferences are awaiting the decisions of the various Governments concerned. The Report is accompanied by a chart giving the distribution of the rainfall during the year 1886, and shows three districts with maxima exceeding 55 inches, in positions corresponding with those on the chart of the previous year. The greatest amount was 79·56 inches at Todtnauberg, and the least 30·28 inches at Diedesheim. It also contains hydrological observations at various stations on the Rhine and its larger tributaries.

DR. K. WEIHRAUCH, Director of the Observatory at Dorpat, Russia, has published the mean values of the meteorological observations at that place for the twenty years 1866–85, giving (1) the results of the individual months and years, and (2) the results for the twenty years combined. This Observatory was established in December 1885 by the late Dr. A. von Oettingen, and is one of the few stations that have persistently published wind *components*, under each of the points N. E. S. W. (in addition to the usual components N. – S., and E. – W.), whereby a better knowledge of the general distribution of the wind is obtained than when only two components are given. The highest mean monthly shade temperature, for the twenty years, is 63°·2 in July, the lowest 19°·6 in January, and the mean for the year 39°·9. The greatest mean monthly rainfall is 3·64 inches in July, the lowest 1·02 inches in March, and the total for the year 16·21 inches. The fourth volume of the actual observations, for the years 1881–85, is now being printed, the publication having been delayed hitherto for want of funds.

THE work done at the Melbourne Observatory in connexion with meteorology and terrestrial magnetism expands a little every year. The importance attaching to rainfall and water-supply renders it necessary to spread rain-gauges wherever trustworthy observers can be secured, and we learn from the latest Report of the Observatory that 272 monthly returns are now received, most of the observers being volunteers. A complete register of Victorian rainfall has been prepared, showing at a glance the annual and monthly rainfall, as well as the averages for a series of years and months. The issue of weather-maps and forecasts for Southern and Northern Victoria has been regularly continued, and this service appears to be fully appreciated.

MR. R. H. SCOTT, of the Meteorological Office, sends us some notices of earthquakes observed at North Unst and Sumburgh Lighthouses. These notices he has come across while examining Journals of Shetland Lighthouses, and it may be worth while to put them on record. The following are records from logs at North Unst Lighthouse: 1879, January 4, 5 minutes past 1 p.m. mean time, felt smart shock of earthquake, lasted about 4 seconds; 1880, July 18, 20 minutes after midnight last, a smart shock of earthquake lasted from 34 to 35 seconds, then a second shock not so strong or of so long duration, -whole rock and building oscillated; 1885, September 26, at 10 p.m., we felt the tower shake very suddenly,—men in bed as well as the man on the watch cannot account for it, unless a slight shock of an earthquake,—no heavy sea, and the wind light from north. At Sumburgh Head Lighthouse the following observation was made: 1876, November 28, at 6 p.m., a slight shock of earthquake was felt at this station. For two or three seconds the lamp-glass in the tower shook violently. As my attention was taken up with the lamp, and fearing that the glass would fall, I therefore did not observe any other movement. The wind at the time was north by east, and light, accompanied with showers, and dark clouds hanging about.

SOME time ago (vol. xxxiii. p. 491) we gave an account of some excellent papers on "Technical Education, Applied Science, Buildings, Fittings, and Sanitation," by Mr. Edward Cookworthy Robins. These papers, revised and admirably illustrated, have now been brought together in a handsome volume entitled "Technical School and College Building," and published by Messrs. Whittaker and Co. The book is dedicated to Prof. Huxley. It will be very welcome to all who are engaged, or who look forward to being engaged, in the construction of technical school buildings.

A BOOK on "Canada and Newfoundland," by Ernst von Hesse-Wartegg, is about to be published in Freiburg-im-Breisgau. The author has repeatedly visited the country he describes, and his work is the more likely to be appreciated in Germany, because the northern part of the American continent has hitherto been almost wholly neglected by German writers of books of travel.

THE first number of the American *Journal of Psychology* will appear early in October. The object of the *Journal* is to record psychological work of a scientific as distinct from a speculative character.

PROF. GEO. H. PALMER, of Harvard College, has published the results of some inquiries lately made by him as to the annual expenditure of Harvard undergraduates. Of the members of the graduating class, about one-fourth had spent from 400 to 650 dollars; another fourth, from 650 to 975 dollars; another, from 975 to 1200 dollars; and another, upwards of 1200 dollars. The lowest sum reported was 400 dollars; the highest, 4000. Addressing parents, Prof. Palmer says:—"If your son is something like an artist in economy, he may live at Harvard under 600 dollars a year. If he is able to live closely, carefully, and yet with due regard to all that he requires, he may easily accomplish it on between 600 and 800 dollars. If you wish him to live here at ease, from 800 to 1000 dollars may be well expended. I should be very confident that every dollar given him over 1200 dollars was a dollar of danger."

IT seems, from a paper by M. Jammes, who lives in Camboja, that animals, as well as human beings, are liable to become addicted to opium-poisoning. In countries where the use of opium is prevalent, many animals remain beside their master while he takes a whiff at his pipe. Breathing an air containing a good deal of opium vapour, they become quite intoxicated, and appear to relish the sensation. This has been noticed concerning cats, dogs, and monkeys. The latter, according to M. Jammes, like the sensation so much that some of them take to eating opium.

THE Foreign Department of the Chinese Government (the Tsung-li-Yamên) has just addressed a very striking memorial to the Emperor proposing the introduction of mathematics and physics into the metropolitan and provincial competitive examinations for public employment. It is suggested that this should be done in all the provinces of the Empire, the successful candidates being sent to Pekin to compete for higher grades. They are to be examined in the capital, in addition to the preceding subjects, in civil and military engineering, international law and history. Those who are successful in obtaining the highest degree will receive an honorary official status, equivalent to a Fellowship, in the Foreign Language College at Pekin, together with official appointments in the capital or the provinces. This scheme has now received the Imperial sanction, and it is difficult for those unacquainted with China to appreciate the vast change which it will produce in time. Hitherto the competitive examinations which must be passed by every intending official, have been confined to the ancient Chinese classics, exercises in prose and poetical composition, and Chinese history, and they have been of the same kind for centuries. They were the ark of the covenant, which it was sacrilege to touch; but the Chinese have now introduced mathematical science into the curriculum. It will be interesting to see how the new and old subjects will fare respectively, now that they are brought together for the first time in the long history of China.

THE first volume of a new periodical specially devoted to botany has been issued in St. Petersburg. The periodical is published in connexion with the botanical garden of the St. Petersburg University by Profs. Beketoff and Gobi, under the title of "Scripta Botanica Horti Universitatis Petropolitanæ." The first volume contains an important work by Prof. Beketoff, on the flora of Yekaterinoslav, which not only gives a list of 1032 species of flowering plants (instead of the 536 species formerly found in the province), but contains a most interesting inquiry into the flora of the steppes of South Russia, as compared with those of the Hungarian *pusztas* on the one side, and the Caspian steppes on the other. The same volume contains a note by Prof. Gobi on a new form of fungi, *Cæoma Cassandræ*, which is found in the peat-marshes of Finland as a parasite on the *Andromeda* (*Cassandra*) *calyculata*; and a paper on the vegetation of the Altai, by A. Krasnoff, containing the enumeration of plants found by the author. These plants were found on the *Artemisia* steppes, on the salt steppes, on black-earth, on meadows inundated during the spring, in forests, and on the higher Alps. While comparing the present flora of the Altai with the Pliocene flora of the same area, characterized by the predominance of the beech and other trees of the temperate region, the author points out that only feeble vestiges of the old flora survive in the present flora of the meadows inundated during the spring. The vegetation of the other sub-regions has completely changed since the Tertiary period, and continues still to change. Thus larch forests disappear with astonishing rapidity, and are succeeded by herbaceous steppes, while *Artemisia* steppes have taken the place formerly occupied by the lakes and brackish marshes which covered the bottoms of the valleys. A feature of the "Scripta Botanica," most welcome to European botanists, is that the papers in Russian are followed by short abstracts in French or German. In the bibliographical section there are analyses of botanical works published in Russia since January 1, 1886. The works analyzed under this head are: Prof. Schmalhausen's "Flora of South-West Russia" (Kieff, Volhynia, Podolia, Poltava, Tchernigoff, and neighbouring regions), published at Kieff; Prof. W. Zinger's work on the "Flora of Central Russia;" Prof. Maximowicz's "Diagnoses Plantarum Novarum Asiaticarum," fascicule vi.; M. Kamenski's "Comparative Researches into the Development and Structure of Urticularia;" and several botanical papers published in Russian scientific periodicals.

THE additions to the Zoological Society's Gardens during the past week include two White-eared Bulbuls (*Pycnonotus leucotis*) from North-West India, presented by General W. H. Breton; a Magpie (*Pica rustica*), British, presented by Mr. H. Stacy Marks, R.A., F.Z.S.; two Turtle Doves (*Turtur communis*), British, presented by Mr. N. Brooks; a Daubenton's Curassow (*Crax daubentoni*) from Venezuela, presented by Capt. Rigaud, s.s. *Larne;* a Loggerhead Turtle (*Thalassochelys caouana*) from the Atlantic Ocean, presented by Mr. R. T. Ward; two Green Lizards (*Lacerta viridis*); two Marbled Newts (*Molge marmorata*), European, presented by the Rev. F. W. Haines; a Crested Pigeon (*Ocyphaps lophotes*) from Australia; a Secretary Vulture (*Serpentarius reptilivorus*) from South Africa; an Elliot's Pheasant (*Phasianus ellioti* ♂); a Temminck's Tragopan (*Ceriornis temmincki* ♂) from China; four Spotted Tinamous (*Nothura maculosa*) from Buenos Ayres; two Indian Crocodiles (*Crocodilus palustris*) from India, deposited; eight Ocellated Sand Skinks (*Seps ocellatus*) from Malta, purchased; a Bennett's Wallaby (*Halmaturus bennetti* ♂) born in the Gardens; a Common Crowned Pigeon (*Goura coronata*), a Cockateel (*Calopsitta novæ-hollandiæ*) bred in the Gardens.

ASTRONOMICAL PHENOMENA FOR THE WEEK 1887 AUGUST 7-13.

(FOR the reckoning of time the civil day, commencing at Greenwich mean midnight, counting the hours on to 24, is here employed.)

At Greenwich on August 7

Sun rises, 4h. 35m.; souths, 12h. 5m. 33·8s.; sets, 19h. 36m.; decl. on meridian, 16° 27′ N.: Sidereal Time at Sunset, 16h. 40m.

Moon (at Last Quarter on August 11) rises, 20h. 58m.*; souths, 2h. 29m.; sets, 8h. 9m.; decl. on meridian, 6° 14′ S.

Planet.	Rises. h. m.	Souths. h. m.	Sets. h. m.	Decl. on meridian. ° ′
Mercury	3 36	11 7	18 38	16 31 N.
Venus	8 44	14 42	20 40	1 14 S.
Mars	1 59	10 13	18 27	23 8 N.
Jupiter	11 32	16 45	21 58	10 3 S.
Saturn	3 3	11 0	18 57	20 37 N.

* Indicates that the rising is that of the preceding evening.

Occultations of Stars by the Moon (visible at Greenwich).

August.	Star.	Mag.	Disap. h. m.	Reap. h. m.	Corresponding angles from vertex to right for inverted image. ° °
8	B.A.C. 81	6½	3 53	4 57	88 353
8	26 Ceti	6½	23 57	1 2†	105 240
9	29 Ceti	6½	3 24	4 5	172 240
13	48 Tauri	6	2 18	3 24	76 244

† Occurs on the following morning.

August.	h.	
8	1	Mercury stationary.

Variable Stars.

Star.	R.A. h. m.	Decl. ° ′		h. m.	
U Cephei	0 52·3	81 16 N.	Aug. 11,	20 49	*m*
R Persei	3 22·8	35 17 N.	,, 9,		*M*
S Virginis	13 27·1	6 37 S.	,, 10,		*m*
U Coronæ	15 13·6	32 4 N.	,, 9,	3 11	*m*
U Ophiuchi	17 10·8	1 20 N.	,, 11,	1 42	*m*
			,,	21 50	*m*
X Sagittarii	17 40·5	27 47 S.	,, 10,	21 0	*m*
T Serpentis	18 23·3	6 14 N.	,, 12,		*M*
β Lyræ	18 45·9	33 14 N.	,, 10,	23 0	*m*
S Sagittæ	19 50·9	16 20 N.	,, 8,	21 0	*M*
S Cygni	20 3·1	57 40 N.	,, 13,		*M*
δ Cephei	22 25·0	57 50 N.	,, 10,	21 0	*M*

M signifies maximum; *m* minimum.

Meteor-Showers.

The present season is generally the richest in the year for meteors, being the season of the *Perseids*, and the neighbouring showers.

	R.A. °	Decl. °	
Near δ Andromedæ	7	32 N.	Swift; streaks.
Perseids	44	56 N.	Swift; streaks.
From Aries	44	25 N.	Swift; streaks.
Near β Persei	48	43 N.	Very swift; streaks.
From Camelopardus	96	71 N.	Slow.
Near θ Cygni	292	52 N.	Rather slow.

THE JUBILEE OF THE ELECTRIC TELEGRAPH.

ON December 12, 1837, William Fothergill Cooke, on behalf of himself and Charles Wheatstone, set his hand and seal to Patent No. 7390, the subject of the specification being: "Certain apparatus or mechanism which is constructed according to our said improvements for giving signals and sounding alarums in distant places by means of electric currents transmitted through metallic circuits." This, the first English patent dealing with the electric telegraph, contains the elements of a thoroughly practical apparatus, as the historical experiment of July 25, 1837, made between Euston and Camden Town, had proved. Unlike many other developments of practical science, the commencement of the epoch when electric telegraphy became a practical success in this country can be sharply defined, and what will become an historical event, viz the commemoration of July 27, 1887, can strictly be said to be the true jubilee of the electric telegraph.

To say that the invention of which Cooke and Wheatstone were the pioneers has done more to transform the conditions of human existence than any other except the steam-engine, and some would add "gunpowder," is but to restate an acknowledged fact. The electric telegraph has so changed the conditions of our social existence as to become indispensable to the same, and we could almost as soon do without food and clothing as dispense with the power that has annihilated distance. The evolution of the electric telegraph as a means of transmitting intelligence from a distance did not, of course, commence from the year when Her Majesty began her reign. The names of Ronald, Schilling, Watson, Sömmering, Schweigger, Weber, Lesage, and very many others, will at once occur to those who give a moment's thought to the subject, as workers in the field long before Wheatstone made his famous experiment, but few, we think, will question the assertion that electric telegraphy as a commercial success distinctly dates from the year 1837.

The commemorative dinner was held in the Venetian Hall at the Holborn Restaurant on Wednesday evening, July 27, the Right Hon. H. C. Raikes, M.P., the Postmaster-General, being in the chair. A large number of representative men were present (the company mustering about 250), though during the last ten years or so death has sadly thinned the ranks of the "old hands," of the Electric, U.K. and Magnetic Companies. Amongst the men of science and others who attended were Capt. Fonseca Varz, Mr. S. W. Silver, Dr. J. H. Gladstone, Mr. C. B. Bruce, the Marquis of Tweeddale, Mr. William Crookes, F.R.S., Mr. Edward Graves, Prof. W. G. Adams, M. Caël, Mr. Jacob Brett, Mr. H. Weaver, Mr. John Pender, Mr. C. H. B. Patey, Mr. G. Shaw-Lefevre, M.P., Lord Onslow, Prof. Stokes, Sir Lyon Playfair, M.P., Sir William Thomson, Sir Frederick Goldsmid, Sir Frederick Abel, Sir Douglas Galton, Mr. J. C. MacDonald, Mr. Edwin Clark, Sir David Salomons, Sir George Elliott, Colonel Andrews, R.A., Mr. Matthew Gray, Sir James Anderson, Mr. Norman Lockyer, Mr. H. C. Fischer, Prof. Hughes, Mr. W. H. Preece, Sir C. Bright, Major-General Webber, Mr. C. E. Spagnoletti, and Mr. Latimer Clark. Letters expressing regret at non-attendance were received from the Marquis of Salisbury, Lord John Manners, Viscount Cross, Mr. W. H. Smith, Sir H. Holland, Sir W. Grove, Sir D. Gooch, Sir A. Borthwick, M.P., Dr. von Stephan (Berlin), Dr. William Siemens (Berlin), Mr. Cracknell (Sydney), Mr. C. Todd (Adelaide), and others.

The Chairman having proposed the usual loyal toasts, proposed the toast, "To the Memory of the Pioneers of Telegraphy," asking the company to join in an expression of